

REPORT OF COAL LAND

BELONGING TO

COL. L. G. HULING AND J. HENRY GIESE, Esq.

The tract lies near the south line of Leidy township, in the county of Clinton, Pa., and stretches for a distance of six and a quarter miles across the head waters of Drury's and Shintown Runs, branches of the Susquehanna, and Two Mile Run, branch of Kettle Creek. The last named is a stream thirty yards wide, where it forms a large portion of the western boundary of the tract. The distance from the Susquehanna and the Philadelphia and Erie Rail Road is two and three-fourths miles to the nearest point, and five and a half to the farthest. The drainage of the whole tract is by the above named streams, and all toward the south. There is no swamp upon the tract, the streams are all formed by springs. The character of the whole

region is that of a vast plateau, through which the streams have cut their way. The formation is of such equal hardness, and the stratification so nearly horizontal, that the beds of the streams have assumed a very regular grade, and the valleys narrow as the streams decrease toward their sources. The soil is good, and nearly all of the land is admirable for farming purposes.

Geologically, this tract lies across the second sinclinal axis west of the Alleghanies, and is near the center of a subordinate basin, which, lying upon the eastern side of the axis, causes it to dip more than usual and diverts it toward the east. About three-quarters of the land lies upon the eastern side of the axis, but being so near the center of a broad depression, the dip is inconsiderable, though ample for drainage. There is a small inclination in a line with the axis toward the south, which will serve for drainage of the deeper part of the basin.

The explored field reaches from the surface down about two hundred feet; but a thin layer of coal is found at a depth of eight hundred feet, and not more than thirty feet above the red shales and but little more above the bed of the river at Renovo. The coal beds are all conformable and can be found at any point where cut upon the whole tract.

Drury's Run cuts through all the discovered workable beds. Shintown Run leaves the two lower beds uncut ; and Two Mile Run has the three lower beds untouched ; but upon both these last the lowest seam can be drained by a short adit.

The beds of coal which have been found are numbered from the surface. The first has been opened about thirty feet from the outcrop, and is two feet three inches thick and increasing, with a sandstone cover and fire-clay floor. This seam is only found upon a small portion of the land, about five hundred acres, and therefore it has been considered unnecessary to open it further.

No. 2 is a bed which has not been explored beyond the outcrop, it has a slate cover with sandstone floor and may prove of value upon investigation.

No. 3 has been opened about sixty feet from outcrop and has still a foot of soft slates separating it into two seams, but as the thickness of the slate is diminishing, the layer will probably become solid soon. The whole thickness of coal in both parts of this seam is four and a half feet. Some of the lower part is still mixed with slate and very little bone, making the quality inferior. The covering is slate and floor of the same. This bed covers about 3,000 acres of the tract and will undoubtedly prove valuable when fully opened.

No. 4 has been explored no more than to prove its existence. The covering is of slate and bottom of fossiliferous fire-clay.

No. 5 is a layer of good coal of five feet, covered with a strong black slate eight feet thick. It is underlaid by fire-clay and appears to offer the best working field, as well from its extent as from the quality of its product. The size of this layer is not less than 3,500 acres, and the coal is of a bright black color, of even quality, the bone being confined to a few inches of the under portion of the bed.

Under this comes a space of unexplored ground, with many indications of coal, but none of them have been followed to results.

Sixty feet lower than the last is seam No. 6, which is under a sandstone cover and over a fire-clay floor. The depth of this upon the edge of the field is four feet four inches. Upon this tract only its outcrop has been reached, but upon the adjoining tract it is improving in quality as it is being worked nearer to this land, and there is good reason for believing that it will prove a valuable bed.

The next bed, No. 7, is about seventeen feet below, with a slate cover and clay floor. Its depth is three feet two inches. This is being worked in two places upon the adjoining tract, and many thousand tons are already taken out.

The seam No. 8 has not been wrought upon, only proven to a thickness of three feet.

The present explorations comprise six workable seams actually proven, with two discovered but unwrought. Some of these six seams underlie 4,550 acres of the tract, there being but little over two hundred acres where the whole of the discovered beds are cut away. The ascertained depth and amount of coal in the various seams are given in the following table:

	<i>Acres.</i>	<i>Depth.</i>	<i>Tons of Coal.</i>
No. 1, .	500	2 feet 3 in.	1,181,250
" 3, .	3,000	4 " 6 "	14,100,000
" 5, .	3,500	5 " 0 "	18,375,000
" 6, .	4,000	4 " 4 "	18,200,000
" 7, .	4,500	3 " 2 "	14,962,500
" 8, .	4,550	3 " 0 "	14,332,500
Total,			<u>81,151,250</u>

Assuming the two discovered but unproven beds to have an average thickness of two and one-half feet, they will add to the above quantity nearly nineteen million tons, which will make the quantity a round one hundred million of tons, or about equal to a year's product of all the mines of Great Britain; and will require the labor of five hundred

miners over one hundred and fifty years to exhaust it.

A bed of iron ore lies within a few feet of the lower seam of coal, and another crops out about one hundred feet below, but neither has been proven.

Toward the western anticlinal axis of this basin there is an extensive outcrop of iron ore, of very good quality, but it is unwrought. Its distance from this land is five miles.

The workings for coal upon the adjoining land are not yet in to the solid beds, the drifts having been set upon the edge of the basin, where by the great washing out of the valley of the Susquehanna, the strata have been broken and the coal slightly disturbed. But the product of these mines is a rich bituminous coal, which cokes readily and is superior for the manufacture of gas. It burns freely in the open air and leaves a clean white ash resembling that from wood.

The central situation of this coal field extends its market in all directions. Its outlets are towards every point of the compass. By way of the Philadelphia and Erie Railway the lakes are reached at Erie; and by the Buffalo and Bradford Road, now in progress and cutting the Philadelphia and Erie at Johnsonburg, there will be a shorter route to

Buffalo and Dunkirk. Also by the completion of the line from Emporium to Olean, on the New York and Erie Road, still another route will be opened to the lakes and western New York. By the Williamsport and Elmira Road all the cities and towns of western and middle New York can now be supplied with coal for gas, steam and family purposes. The great coal markets of Philadelphia and Baltimore are nearly equidistant from this field, and with gradients more favorable than from any other field of bituminous coal.

The following table shows the distance to some of the great markets of the country by rail roads now in operation :

New York,	286 miles.
Philadelphia,	261 "
Baltimore,	236 "
Erie,	189 "
Cleveland,	284 "
Rochester,	234 "
Dunkirk,	234 "

While upon the completion of the road from Buffalo to Emporium the distance to the lakes will be reduced to about 170 miles.

The proximity of this land to the Philadelphia and Erie Railway adds most materially to its value,

as only three miles of rail is required to reach coal enough for a century's working, and the line is now occupied by a tramway in use.

The supply of coal from this property can be regulated by demand, as the character of the surface is such, that from the main road branches can be run to every acre of the land if many drifts should be found necessary to supply the market.

The two dips, one toward the west and one to the south, makes it possible to work the field in different directions, and consequently at as many places as can be desired. The railway track can be taken to the mouth of each pit, so that the wagons will run from the face and dump themselves into the cars, making the labor of the putters only that of taking in the empty wagons and watching their outcoming. Accustomed as I am to the expensive lifting of the English mines, this appears a large item in the economy of this field. The superior coking qualities of the coal permits the saving of all the waste, which in England is made by expensive processes into patent fuel: simply by erecting coking ovens where the waste can be run into them from the wagons. The extensive beds of iron ore a little way down the river will afford market for all the coke which can be thus made. I would recommend any

company working this field to supply themselves with cars, ample to transport their coal to market; they can then always fill their orders promptly, which cannot be done when dependent upon railway companies for rolling stock.

At the town of Renovo, which is near one end of this land, are located the shops of the Philadelphia and Erie Railway Company; and to this point in consequence is being attracted a large population. The consumption of coal in these shops and the town, together with the railway, will be considerable.

Beside the wealth of coal which underlies this land, it is covered with an original growth of fine timber, consisting of white and yellow pine, oak and hemlock. A portion has been cut, but the balance still standing is estimated at from fifteen to twenty million feet; so that in addition to the timber necessary for mining and railway purposes, the surplus can be manufactured and put into market at a very large profit.

In addition to a total acreage of 4,760, there is included other property as follows: Four dwellings, two storehouses, one blacksmith shop, four stables, one barn, numerous small buildings, and several lumbermen's shanties, substantially built, fit for

miners' quarters. One farm of one hundred and sixteen acres has twenty-five cleared, with young orchard, meadow, &c.; buildings new and in good order. One dwelling is situated in town of Westport, opposite to rail road station, was built last year and contains thirty rooms. One storehouse and lot is in town of Westport; and two of the dwellings are a little distance from the town, with accommodation for several families. There is a tramway reaching from the river and railway quite into the middle of the land, which will much facilitate the labor at the beginning. Also roads throughout the whole tract, and no part is inaccessible to wagons.

It may be proper to state that my examination of these coal seams has occupied a long time, and that I have had the aid of a number of workmen.

EGBERT HASARD,
Mining Engineer.

BALTIMORE. *July* 20, 1868.

EXTRACTS FROM REPORT

OF

PROF. WM. F. ROBERTS, OF PHILADELPHIA.

"The veins are easily traced by the well-marked depression on the hill slopes, where they out-crop, and they have been opened on adjoining land. These coal strata can be opened by drift, on the several streams in this property, and worked above water level; numerous openings can be made in this way, and a large amount of coal mined daily, which will have a down-hill transport to the railway. The coal is of the fat coking variety, and an excellent article for the manufacture of gas, for which purpose it will be greatly in demand. It will mine without waste, as the dust will coke and will be largely used in manipulating iron. This coal, for steam and smithing requirements, as well as for domestic fuel, cannot be excelled anywhere, and therefore will be consumed in large quantities. Interstratified with the coal are veins of iron ore of rich quality and very abundant in quantity, and with these are beds of fire-clay."

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"In addition to the useful and valuable minerals lying in the hills above water level, within the limits of the property I am reporting upon, the evidences are extremely favorable for oil,—the geological characteristics and topographical features of these tracts of land are similar to those exhibited in the oil producing regions of Venango and adjoining counties in western Pennsylvania, and oil men have already made purchases

and leases of adjoining lands, on Kettle Creek, for oil privileges: indeed, the excitement there in this respect is growing stronger, daily. Upon the Sommersen place, about three miles above this property, on Kettle Creek, there is a strong gas spring, which, upon application of a lighted match, readily ignites and burns freely; other smaller emissions of gas exist in this vicinity. The rocks and shales within the limits of this property, in places, exhibit evidence of having been saturated with Petroleum—the formation, too, is of the kind to contain oil—oleagenous matter, in dry seasons, can be seen oozing out from the joints and cleavages of the rocks on the margins of the streams: the illuminating oil is found in the upper portion of the Devonian series generally, and these crop out from underneath the coal formation on the borders of the streams which flow through these tracts of land. The geological structure of the strata at the surface indicate that there are fissures and crevices below, and these openings are the reservoirs or receivers of Petroleum—the confined gas in these subterranean fissures, when tapped by boring, cause flowing wells. All the property along the valley of Kettle Creek, between this that I am reporting upon and the gas spring before spoken of, and far above it, have been leased for oil privileges. This land comprises within its limits numerous excellent sites for oil wells, and contains a very large amount of boring territory, upon the branches of Kettle Creek, and on Shintown Run and Drury's Run and their tributaries."